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ABSTRACT

This paper examines the precise correlation between A-bar dependency and the notion of referentiality in Korean. Referentiality is initially defined by the lexical content that only noun phases inherently carry. It is demonstrated that the specification of phi-features renders arguments referential and adjuncts non-referential. This definition is then refined as a set theoretic notion of referentiality to capture the varying degrees of strength in A' dependencies across wh-islands (weak islands) that different wh-phrases show. It is demonstrated that the relative strength of A' dependencies across wh-islands can be predicted by the referential hierarchy. Strong islands are also considered and the notion of "barrier defiability" is introduced to properly constrain A' movements across the strong islands. It is further demonstrated that there may be an argument-adjunct asymmetry even in wh-extractions out of strong islands. If extracted wh-phases are highly referential according to the above referential hierarchy, the barrier may be neutralized and thus an A' dependency may be established even across a strong island. This defiance of a barrier is referred to as Debarrierization as reflected in the relative notion of Barrier Defiability. (Contains 34 references.) (Author/NAV)

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A-BAR DEPENDENCY, WH-SCRAMBLING IN KOREAN, AND REFERENTIAL HIERARCHY

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Abstract: There is an argument-adjunct asymmetry in wh-extractions from weak islands. Some previous approaches to the issue concur that the reason why argument wh-phrases may create long distance A' dependencies across the islands is due to their referential properties, while non-referential adjunct wh-phrases must establish A' dependencies inside some local domain. The notion of referentiality that my analysis crucially employs, unlike the previous approaches, is defined by a set theory. This set theoretic notion of referentiality establishes a referential hierarchy among different wh-phrases, and this hierarchy correlates with the different degrees of strength in A' dependencies that different wh-phrases show in their extractions across weak islands.

My purpose in this paper is to find the precise correlation between A-bar dependency and the notion of referentiality. Since the crucial question in the issue is how to properly define referentiality, the content of the paper will be organized as follows. In Section 1, as an initial attempt, I define referentiality by the lexical content (phi-features: person, number, gender) that only noun phrases inherently carry. The specification of phi-features will render argument wh-phrases referential (long distance A' dependencies) and adjunct wh-phrases non-referential (local A' dependencies). In Section 2, the initial definition of referentiality will be refined as a set theoretic notion of referentiality in order to capture the varying degrees of strength in A' dependencies across wh-islands (weak islands) that different wh-phrases show. I will show that the relative strength of A' dependencies across wh-islands can be predicted by the referential hierarchy: adjunct wh-phrases < bare wh-phrases < which N < partitive wh-phrases. In Section 3, I will consider the strong islands and introduce a new notion: Barrier Defiability.

1. Argument and Adjunct Asymmetry in Weak Islands

Introduction: Rizzi (1990) and Manzini (1992). Weak islands are sensitive to the type of wh-phrases extracted from them. There is a subject-object asymmetry: a subject can not be extracted out of a wh-island whereas an object extraction is possible. There is also a subject-adjunct symmetry because extraction of an adjunct out of a wh-island patterns like subject extraction. Rizzi (1990), however, based upon Italian data, claimed that the subject-adjunct symmetry is only apparent and that subjects actually pattern with objects rather than with adjuncts. This would make the term 'argument-adjunct asymmetry' more appropriate. As for the nonextractibility of subjects out of wh-islands in English-type languages, he derives the wh-trace effects along with that-trace effects from his version of

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ECP reduced down to Proper Head Government requirement (Formal Licensing) according to which Agr features in Comp may serve as a proper head governor. The Identification portion of the conjunctive ECP (antecedent goverment) is regulated by Relativized Minimality. Relativized Minimality constrains the extraction of non-referential phrases like adjuncts. Arguments with referential theta roles are, however, exempt from the effects of Relativized Minimality. Thus Rizzi provides two ways to establish A' dependency: one through the binding relation for arguments with referential theta roles, and the other through the antecedent government for non-referential phrases such as adjuncts. Then the reason for the defiance of relativized minimality effects by arguments is that the operator may be connected to its variable through its referential index by binding, which may hold at a long distance. For adjuncts, the same device is not available and the only way for an operator-variable connection is through antecedent goverment, which accounts for their local nature of A' dependency. This can be illustrated by the following data from Rizzi (1990)[1].

(1) a. ? Which problem do you wonder how PRO to solve t t ?
  b. * How do you wonder which problem to solve t t ?
(2) Pseudo-Opacity
  a. Combien de livres a-t-il beaucoup consultes t ?
    'How many books did he a lot consult ?'
  b. * Combien a-t-il beaucoup consulte t de livres ?
    'How many did he a lot consult of books ?'
(3) Inner Island
  a. Combien de voitures n' a-t-il pas conduit t ?
    'How many cars did he not drive ?'
  b. * Combien n'a-t-il pas conduit t de voitures ?
    'How many did he not drive of cars ?'

Manzini (1992) provides still another way to explain the argument-adjunct asymmetry in weak islands. Her account centers upon the notion of K-government, reflecting the fact that arguments are Case-marked whereas adjuncts are not. She argues for two types of A' dependency, namely Categorial Index dependency and Address-based dependency. Since arguments are K-governed, they get into address-based dependency which allows them to have a long-distance A' dependency across wh-islands (weak islands). The operator-variable connection for non-case marked adjuncts is, however, possible only through Categorial index dependency. Therefore they are allowed to show a local A' dependency only. As for wh-trace and that-trace effects, they are derived by the syntactic proviso that a subject in the relevant position is not K-governed due to the failure of agreement between C and I. Her definition of barrier that prevents adjuncts from establishing a long-distance A' dependency across weak islands was given in relation to the syntactic notion g-marking. Her account predicts the general contrast between adjuncts and arguments.

(4) a. * How do you wonder what to fix t t ?
  b. ? What do you wonder how to fix t t ?

(5) Manzini (1992)

a. ? [Quanti pazienti]$_i$ ti chiedi [chi$_j$ t$_j$ visitera t$_i$] -- Italian
How many patients do you wonder who will visit

b. * Quanti$_i$ ti chiedi [chi ne$_k$ visitera [t$_i$ t$_k$]]
How many do you wonder who will visit of them

c. * [How carefully]$_i$ do you wonder who$_j$ t$_j$ worded the letter t$_i$?

(6) Inner Island

a. * Why don't you think Mary finished the job t ?

b. What don't you think Mary finished t ?

(7) Factive Island[2]

a. * Why do you regret OP that Tom fixed the radio t ?

b. Which radio do you regret OP that Tom fixed t ?

The K-government (case marking) she resorts to, however, is purely a syntactic notion with no relation to the distinction between arguments and adjuncts in terms of intrinsic referential properties. Manzini would run into immediate difficulties in dealing with the Korean data (8) where an Accusative case marked frequency adverbial adjunct can not move (Scrambling) out of a wh-island whereas an embedded object can. Here I will assume, along with Mahajan (1990) and Saito (1992), that long-distance scrambling, being subject to the same kind of A' dependency, behaves like A' movement.[3]

(8) a. * myot pin-ul$_i$ Yumi-nun odeso Inho-ka i chak-ul t$_i$ ilkessnunji mulotni ?
how many times-Acc Yumi-Top where Inho-Nom this book-Acc read asked
'How many times did Yumi ask where Inho read this book t ?

b. (?)etten chayk-ul$_i$ Yumi-nun odeso Inho-ka t$_i$ se pin-ul ilkessnunji mulotni ?
which book-Acc Yumi-Top where Inho-Nom three times-Acc read asked
'Which book did Yumi ask where Inho read three times ?'

Kim and Maling (1993) provide evidence that the accusative case on frequency adverbial adjuncts as in (8) may be regarded as a syntactic structural case. They argue that case spreading within VP can assign structural case to both arguments and adjuncts, yielding multiple accusative case constructions, and they show that under passivization adverbial adjuncts manifest the same nominative-accusative case alternation as structural argument NPs.

(9) Kim and Maling (1993)

a. Chelsoo-ka geu chayk-ul se pin-ul / *i ilkessta --Active
Chelsoo-Nom the book-Acc three times-Acc/*Nom read
'Chelsoo read the book three times'

b. Geu chayk-i se pin-i /*ul ilk-hieci-essta --Passive
the book-Nom three times-Nom/*Acc read-passive
'The book was read three times.'

Assuming their argument to be valid, the structurally case marked adverbial adjuncts in (8) may satisfy K-government and enter an address-based dependency. If there is an

AgrP projection in Korean, as Lee (1994a) shows in relation to Chomsky (1992) and Lasnik (1993), and the frequency adverbial adjuncts are base-generated within the embedded VP, then the adjuncts may be c-commanded and case-marked by some functional head like Agr-o in the pre-movement stage. This will make (8a) remain unaccountable in Manzini's analysis.

In summary, the two previous attempts hitherto discussed to provide an account for the contrast between arguments and adjuncts in their extractability out of weak islands may be somewhat inadequate. Rizzi's (1990) referential and non-referential distinction roughly equals argumental and non-argumental (or quasi-argumental) distinction, and he does not provide a clear account of exactly what intrinsic referential properties a phrase must have to be considered referential and how the notion of referentiality must be defined in that respect. Manzini's (1992) K-government must deal with a clear counterexample like (8a). In subsequent sections, unlike Manzini (1992) I will still adhere to the concept referentiality in my attempt to capture the argument-adjunct asymmetry in wh-islands. However, I will take a rather different approach when it comes to defining referentiality. My notion of referentiality will be characterized by the phi-features (person, gender, number) noun phrases inherently carry in order to overcome some of the problems other approaches may not handle directly. Later, to cover an extensive empirical domain, this initial definition will be further refined as the set theoretic notion of referentiality later in the paper.

The Analogy between Long Distance Binding and A' Dependency. In this subsection, I will attempt to answer two questions: What kind of intrinsic properties makes a phrase referential, and why arguments but not adjuncts may be regarded as being referential to manifest the hitherto discussed argument-adjunct asymmetry. In doing so I will resort to a certain similarity between anaphors and wh-phrases with regard to referentiality.

In the relevant literature, there have been various debates over the characteristics of long distance binding phenomena in languages like Korean. In (10), it can be shown that the Korean anaphor *caki* can be long distance bound by its antecedent whereas another anaphor *cakicasin* and the reciprocal expression *selo* must be bound inside a local domain.

(10) a. Chelsoo$_i$-ka Younghee$_j$-ka caki$_{i,j}$-lul cal tolbonta-ko malhatta
Chelsoo-Nom Younghee-Nom self-Acc well take care of-Comp said
'Chelsoo said that Younghee takes care of self well'

b. Chelsoo$_i$-nun Younghee$_j$-ka cakicasin$_{*i/j}$-lul cal tolbontako malhatta
Chelsoo-Top Younghee-Nom selfself-Acc well take care of said

c. Kim-ci-pupu$_i$-ka Lee-ci-pupu$_j$-ka selo$_{*i/j}$-lul salanghanta-ko malhatta
Kim couple-Nom Lee couple-Nom each other-Acc love-Comp said
'Mr.and Mrs.Kim said that Mr.and Mrs.Lee love each other'

The relevant question here is what properties of such expressions are responsible for allowing *caki* to be long distance bound, but *cakicasin* and *selo* to be only locally bound.[4]

In Lee (1994b), to deal with the question of what properties allow only some anaphors to have long distance binding effects, I took a non-traditional approach by first setting up the relative referentiality between local and long distance anaphors and then establishing a correlation between referentiality and long distance binding. The correlation was established as :

(11) The more referential an anaphor is, the longer the possible distance between the anaphor and its antecedent.

(11) treats referentiality as a relative notion rather than an absolute one. Here clarification is necessary regarding the statement that says that a phrase is referential and that some anaphors are more referential than others.

In Lee (1994b), I proposed that one way to define referentiality may be to rely upon the phi-features (person, gender, number) that a noun phrase contains, and that relative referentiality may be defined as :

(12) Between two expressions A and B, A is regarded as more referential than B iff A has more lexical content (phi-features: person and gender) than B.[5]

From this definition, *caki* would be determined as more referential than *cakicasin* and *selo* since it contains more phi-features than the other two. *caki* is specified as a third person anaphor while *cakicasin* and *selo* do not have phi-features. This can be confirmed through data I provide in Lee (1994b) to show that *caki* can take only a 3rd person singular antecedent as its binder without gender distinction while *cakicasin* and *selo* can take any person and any gender antecedent as their binder because they carry no phi-features that are referentially significant.[6] This being the case, (11) and (12) will correctly predict the long distance dependency of *caki* upon its antecedent and the relatively local dependency of *cakicasin* and *selo* on their antecedents.

Returning to the original question of what properties make the arguments referential but not the adjuncts, it seems that the answer may be readily obtained by finding some similarity between anaphors and wh-traces. First, let us consider how the similarity might be derived. Bouchard (1983), in determining the content of empty categories, noted on the basis of Chomsky (1981) that wh-traces can have F-features (phi-features) since they may morphologically agree with other sentential elements. He stated that "these features are said to be left behind by move *a*"(Bouchard 1983, 14). This claim makes sense when considering sentences like (13).

(13) a. Which person do you think $_{cp}$[t'$_{ip}$[t (3rd person singular) bothers John]]?
b. What do you think $_{cp}$[t'$_{ip}$[t (3rd person singular) is the problem]]?

Following Bouchard's claim, in (13) one way to realize agreement morphology on the embedded verbs may be to assume that phi-features which the wh-phrases carry are either left behind or transmitted to the base-generated positions occupied by traces. Then

a wh-trace carrying phi-features as in (13) will pattern with the long distance anaphor *caki* (3rd person singular) in that it may be long distance bound by its actual antecedent across its potential A-bar antecedent (wh-island or weak island insensitivity) as can be seen in (4b), (5a), (6b), and (7b). However, note that the wh-phrases involved in (13), (4b), (5a), (6b), and (7b) are argument phrases. The adjunct wh-phrases in (14) do not inherently carry phi-features, so when they move, there are no phi-features to be left behind or transmitted. Consequently adjunct wh-traces do not contain phi-features.

(14) Why/ How do you think that John solved that problem t (no phi-features) ?

Then adjunct wh-traces with no phi-features would parallel the local anaphors *cakicasin* and *selo.* which are also lacking in phi-features, in that adjunct wh-traces could be only locally bound by their actual antecedents. Hence weak island sensitivity as shown in (4a), (5b-c), (6a), and (7a).[7] This will make the argument-adjunct asymmetry in weak islands prone to the same type of analysis, namely, (15).

(15) Between two wh-phrases A and B, A is regarded as more referential than B iff A has more lexical content (phi-features) than B. The more referential a wh-phrase is, the longer the A-bar dependency.

According to (15), argument wh-phrases carrying phi-features would be more referential than adjunct wh-phases containing no phi-features. Perhaps the referential degree of adjunct wh-phrases may be zero due to the complete lack of these features. The argument-adjunct asymmetry and its comparability to the long-distance vs. local binding of anaphors can be seen in Korean data (16) and (17) in comparison with (10).

(16) Wh-scrambling in Korean[8]

a. * eottuge$_i$ John-un eodeso Mary-ga t_i i cha-lul gochi-essnunji ani ?
how John-Top where Mary-Nom this car-Acc fix -Past know
'How$_i$ does John know where Mary fixed this car t_i ?'

b.(?) eotten cha$_i$-lul John-nun eodeso Mary-ga t_i gochi-essnunji ani?
which car-Acc John-Top where Mary-Nom fix-Past know
'Which car$_i$ does John know where Mary fixed t_i ?'

(17) a. * eottuge$_i$/*whe$_i$ John-un etten ahiy-ege Sue-ga t_i sip bull-lul juettnunji ani ?
how/why John-Top which kid-Dat Sue-Nom ten dollars-Acc gave know
'How$_i$/Why$_i$ does John know to which kid Sue gave ten dollars t_i ?'

b.(?) eotten ahiy$_i$-ege John-un eolma-lul Sue-ga t_i juettnunji ani ?
which kid-Dat John-Top how much money Sue-ga gave know
'Which kid$_i$ does John know how much money Sue gave t_i ?'

As for the analogy between anaphors and wh-traces, other linguists also point toward the same direction. Manzini (1992) collapses the two into one supercategory "dependent elements". Aoun (1985) suggests that wh-traces are A-bar anaphors in addition to being R-expressions. The traditional assumption that wh-phrases are just R-expressions may be highly doubtful. The clear distributional difference is that wh-traces, unlike overt R-

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expressions, are always bound sentence internally by their antecedents, or that overt R-expressions, unlike wh-traces, can never have c-commanding antecedents in either A or A-bar position. In view of Manzini (1992) and Aoun (1985), the analogy I drew between anaphors and wh-traces on the basis of referentiality defined upon phi-features is far from being farfetched. The two belong to the same category in that both of them should be bound sentence internally by their antecedents.

In summary, this section defined the notion of referentiality in terms of lexical content (phi-features), and I showed how the definition correlates with long-distance vs. local binding of anaphors. Ultimately, the analogy between (long) distance binding and A-bar dependency was brought about by showing that with the given definition of referentiality, the analysis for long-distance and local anaphors may be carried over to the argument (long distance A' dependency)-adjunct (local A' dependency) asymmetry in weak islands. Now the question with which I began this section may be answered: It is the property of phi-features XP carries that makes arguments referential but not adjuncts.

So far I have used the term "long vs. local" in a vague sense. Thus it may be necessary to clarify how the terms can be syntactically defined. Therefore, I define local domain as in (18):

(18) A local domain for a dependent element D (wh-trace/anaphor) is an immediate maximal projection that contains D and its potential antecedent P c-commanding D. If D is a wh-trace, then P is XP in an A-bar position. If D is an anaphor, then P is XP in an A-position.

(19) Between two dependent elements A and B of the same type, A is regarded more referential than B iff A has more lexical content (phi-features) than B. The more referential a dependent element is, the longer the dependency between the element and its antecedent.

a. An adjunct wh-trace should be bound in its local domain (local dependency) since adjuncts do not have phi-features. This is analogous to the local anaphors (*cakicasin* and *selo*).

b. An argument wh-trace may be long distance bound outside its local domain (long distance dependency) since arguments may have phi-features. This is analogous to the long distance anaphor (*caki*).

X^0-Chains. V-movement is another case which shows a strict local dependency. This particular local X^0-dependency can be explained by Travis'(1984) Head Movement Constraint. The constraint is exemplified in (20).

(20) a. John will be reading the book.
b. Will$_i$ John t_i be reading the book ?
c. * Be$_i$ John will t_i reading the book ?

Again, the relevant issue here is why in (20c) a long distance X^0-dependency between the trace and its antecedent across the intervening potential antecedent is not allowed. For

Rizzi (1990), it would be a violation of Relativized Minimality, and for Manzini (1992), the heads can not enter an address-based dependency and therefore must satisfy antecedent government since they are not case-marked. The line of approach I am pursuing will result in the same degree of explanatory adequacy. The related heads in V-movement do not carry any phi-features, and as such must be treated as being non-referential along with adjunct wh-phrases. This would immediately account for the ban on the long distance X^0-dependency in (20c) while correctly predicting only the local X^0-dependency shown in (20b).

Cliticization in Romance languages may be another instance of X^0-Chain. Following Kayne's (1989) argument that clitic movement is head movement, one must deal with the question as to why long distance cliticization may be allowed in some languages. Kayne provides the following data showing long distance cliticization.[9]

(21) Kayne (1989)

a. Gianni li vuole vedere -Italian
   John them-wants to-see
b. Jean la fait manger par/ a Paul -French Causative Construction
   John it-makes eat by/ to Paul
c. Gianni ve li vuole mosstrare -Italian
   John you$_{Dat}$-them-wants to-show
d. Non ti saprei che dire -cliticization out of wh-island in Italian
   (I) Neg you$_{Dat}$-would-know what to-say

Sportiche (1992) also deals with cases of long distance cliticization.[10]

(22) Sportiche (1992)

a. Jean la veut manger -middle French
   Jean it wants to eat
b. Pierre le voulait lire -middle French
   Pierre it wanted to read
c. lo quiero ver -Spanish
   (I)him-want to see
d. Mario, non lo$_j$ saprei a chi affidare t$_j$ -Italian
   Mario, I would not know to whom to entrust him

Manzini (1992), who also assumed cliticization to be N^0-movement, argued that cliticization should be strictly local because a clitic can not be K-governed (case-marked), being a head rather than a phrasal maximal projection. Then clitics would not get into an address based dependency with their traces even though they intrinsically carry overt case feature.[11] This conclusion of hers was based upon pieces of isolated French data. However, her approach and Rizzi's Relativized Minimality may not be adequate to capture the possible long distance X^0-dependency shown in (21) and (22). The question of what can potentially make long distance head dependency possible in this case, unlike Verb-movement in (20), may be readily answered: clitics are referential like argument

wh-phrases because they contain phi-features, which are left behind or transmitted to their traces in cliticization.[12] Therefore, they may show long distance X^0-dependency with their traces.

A-Movement. Having accounted for A' dependency and X^0-dependency in the manner described above, what remains mysterious is the fact that A-movement shows a strict local dependency even though a moved NP may be referential and fully specified in phi-features.

(23) a. * He_i seems that it was criticized t_i in public.
b. It seems that he_i was criticized t_i in public.
c. * She_i seems that it is likely [t_i to become a good lawyer]
d. She_i seems [t_i to be likely [t_i to become a good lawyer]]

This problem that the strict local nature of A-movement poses should be properly dealt with for any theory which attempts to explain local vs. long distance dependency by having recourse to the notion of referentiality. Therefore (23a and c) are problematic also for Rizzi (1990) and Cinque (1990), even though they do not pose any problems for Manzini (1992) whose system relies not upon referentiality but upon K-government (case-marking).[13] For Rizzi, (23a and c) are independently ruled out by the Theta Criterion, which is defined in terms of chains of antecedent goverment. Cinque (1990) takes an approach somewhat similar to Rizzi's, and argues that for a trace to enter a binding chain for long distance dependency rather than an antecedent government chain, it must be intrinsically referential. However, an A-trace may not be intrinsically referential because it is not referentially independent, but constitutes only one component of a whole referential entity, namely, the A-chain. Therefore, according to Cinque an A-chain must satisfy antecedent government.

Though intuitively insightful, these attempts by both Rizzi and Cinque to explain the local nature of NP-movement are conceptually vague. Thus for A-movement in (23), I will attempt to account for the strict local dependency through a version of the Visibility Condition (Chomsky 1986) that a noun phrase must satisfy: a noun phrase must have Case to be visible for theta role assignment.[14] Now suppose that NP must have Case since Case functions to identify how the NP is referentially interpreted in the theta structure. As I mentioned above, if it is the case that an XP is referentially interpreted depending upon the phi-features it carries, then it can be said that Case functions to guarantee the referential interpretation of an XP in the relevant theta structure through properly licensing the phi-features the XP carries. This would entail that for an XP to be referential, the phi-features it carries must be properly licensed and made visible by an additional feature, namely, Case feature. Such being the case, the relevant NPs in (23), when movement takes place, carry no Case feature since they are Raising or Passive predicates. Thus the phi-features they carry can not be properly licenced due to the lack of Case feature, and remain invisible. The unlicensed (invisible) phi-features the NPs carry will fail to yield a referential interpretation, hence the strict local nature of A-movement in (23).[15]

In summary, I have hitherto discussed four different types of dependencies: anaphor binding, A' dependency, X^0-dependency, and A-movement. For each one of these four different types of dependencies, what may count as a potential antecendent (or subject) creating an opaque domain relevant for one dependency should be distinct for all four of them. This means that different local domains should be defined for each of the four dependencies. Whether the relevant dependency can be established across the local domain (long distance dependency) or only inside the local domain (local dependency) depends upon the concept referentiality defined upon lexical content (phi-features). In the same spirit as Progovac's (1992) Relativized Subject and Rizzi's Relativized Minimality, I define Relativized Local Domain in (24).[16]

(24) Relativized Local Domain
A local domain for a dependent element D (non-pronominal empty category or anaphor) is an immediate maximal projection that contains D and its potential antecedent P c-commanding D.
If D is an X^0-trace, then P is a head
If D is an A-trace (XP), then P is XP in an A-position
If D is a wh-trace (XP), then P is XP in an A-bar position
If D is an anaphor in A-position, then P is XP in an A-position

Having provided (24), now the correlation between referentiality and long vs. local dependency given in (19) may be generalized to all four different types of dependencies, namely, (25).

(25) Between two X(P)s A and B that belong to the same type of dependency , A is regarded more referential than B iff A has visible lexical content (phi-features) whereas B does not. The more referential an X(P) is, the longer the dependency between the dependent element and its antecedent. The lexical content (phi-features) that an X(P) carries is visible iff the features are properly licensed by the Case feature of the X(P).

2. Refinement: Referentiality and A-Bar Dependency

Introduction. Even though what I provide in (18) and (19) can capture the general argument-adjunct asymmetry in A'-dependency across wh-islands, the system itself may not be rich enough to adequately account for the multiple contrasts that can be shown in the Korean data (26) and (27).[17]

(26) a. * ettuge$_i$ neo-nun ettun cha-lul nae-ka t_i gochi-essnunji algosipni ?
how you-Top which car-Acc I-Nom fixed want to know
'How$_i$ do you wonder which car I fixed t_i ?'
b. ?? muett$_i$-lul neo-nun ettuge nae-ka t_i gochi-essnunji algosipni ?
what-Acc you-Top how I-Nom fixed want to know
'What$_i$ do you wonder how I fixed t_i ?'

c. ? ettun cha_i-lul neo-nun ettuge nae-ka t_i gochi-essnunji algosipni ?
which car-Acc you-Top how I-Nom fixed want to know
'Which car_i do you wonder how I fixed t_i ?'

d. i-jung-e ettun cha_i-lul neo-nun ettuge nae-ka t_i gochi-essnunji algosipni ?
out of these which car-Acc you-Top how I-Nom fixed want to know
'Which of these $cars_i$ do you wonder how I fixed t_i ?'

(27) a. * $ettuge_i$ neo-nun ettun yoja-lul nae-ka t_i mana-essnunji kungumhani ?
how you-Top which woman-Acc I-Nom met wonder
'How_i do you wonder which woman I met t_i ?'

b. ?? $nwuku_i$-lul neo-nun ettuge nae-ka t_i mana-essnunji kungumhani ?
who-Acc you-Top how I-Nom met wonder
'Who_i do you wonder how I met t_i ?'

c. ? ettun $yoja_i$-lul neo-nun ettuge nae-ka t_i mana-essnunji kungumhani ?
which woman-Acc I-Top how I-Nom met wonder
'Which $woman_i$ do you wonder how I met t_i ?'

d. i-jung-e ettun $yoja_i$-lul neo-nun ettuge nae-ka t_i mana-essnunji kungumhani ?
out of these which woman-Acc you-Top how I-Nom met wonder
'Which of these $women_i$ do you wonder how I met t_i ?'

The different degrees of acceptability observed in the data (26) and (27) may not be captured by the relative referentiality defined by the phi-features as in (19) because there may be no difference in terms of the phi-features, especially between the two wh-phrases in (27c) and (27d), namely, the *which N* type and the partitive wh-phrases. What (26) and (27) show is that even though there clearly exists a general argument-adjunct asymmetry in A' dependency across wh-islands, not all argument wh-phrases can establish long distance A' dependency in equal strength across the islands. This being the case then, both Rizzi (1990) and Manzini (1992) would also fall short of adequately explaining the gradual improvement effects of (a) through (d) in (26) and (27). The view that there is an additional requirement on argument wh-phrases for long distance A' dependency is advocated by Cinque (1990).

In this section, first I will briefly examine the competing approaches to the issue of what classes of elements may undergo long wh-movement: Cinque (1990) argues that D-linking in the sense of Pesetskey (1987) is the proper notion. These approaches will be reviewed from empirical standpoints in view of the data (26) and (27). Later I will conclude that the sort of data in (26) and (27) can be adequately captured by refining the notion of referentiality given in (19) as some set theoretic notion of referentiality. Finally, it will be shown how this refined notion of referentiality may correctly correlate with different degrees of A-bar dependency.

Problems With Manzini (1992) and Rizzi (1990). As mentioned above, Manzini's (1992) system may not be sophisticated enough to capture the contrasts in (26) and (27) since all argument wh-phrases are uniformly case-marked (k-governed). Therefore the varying degrees of wellformedness observed among different argument wh-phrases in the above data remain unexplained. Another problem is that in (26d) and (27d) the embedded

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indirect questions are tensed clauses. Then according to Manzini's system, the intervening tensed T° head will be made visible through verb incorporation and will be independently addressed. As a result, an embedded T° head that carries an address of its own will block the address-based dependency between the extracted wh-phrase and its trace, making the categorial index dependency (local A' dependency) the only option. This would incorrectly predict the long distance A' dependency in the data (26d) and (27d) to be ruled out. However, (26c and d) and (27c and d) clearly show that the tense island effects may be neutralized contra Manzini (1992).[18]

Rizzi's (1990) notion of referential theta roles may not be sufficient to predict even the simple contrast in (28), let alone the rather complex contrasts in (26) and (27), since the two argument wh-phrases in (28) would be assigned the same referential theta roles and thus both of them would be equally referential according to his analysis.[19]

(28) a. ?? muett$_i$-lul John-un ettuge t_i pulji kungrihagoiss-ni ?
what-Acc John-Top how to solve wonder
'What is John wondering how to solve ?'
b. (?) eottun munje$_i$-lul John-un ettuge t_i pulji kungrihagoiss-ni ?
which problem-Acc John-Top how to solve wonder
'Which problem is John wondering how to solve ?'

Cinque (1990). The sort of contrast in (28) is in part what motivated Cinque (1990) to adopt Pesetsky's (1987) notion of D-linking and argue that only D-linked wh-phrases are referential and may have a long distance binding relation with their traces, allowing them to defy wh-islands. However, only successive cyclic derivation would be available for non-D-linked non-referential wh-phases, which subjects them to wh-island effects (weak island). For Cinque, being D-linked is one way for a phrase to be referential, and for a wh-phrase to have a long distance A' dependency, it must be D-linked to receive referential properties, in addition to being assigned an argumental (referential) theta role in an A-position.

The notion D-linking, however, is a binary concept: a phrase is D-linked or non-D-linked, and there is no such relative notion as varying degrees of D-linkedness. Then, the dichotomous notion of referentiality defined upon the binary concept D-linking may not adequately handle different degrees of acceptability which can be noticed in (29) as well as in (26) and (27).[20, 21]

(29) a. ** How$_i$ are you wondering which problem to tackle t_i ?
b. * What the hell$_i$ are you wondering how to tackle t_i ?
c. ?? What$_i$ are you wondering how to tackle t_i ?
d. (?)Which problem$_i$ are you wondering how to tackle t_i ?
e. Which of these problems$_i$ are you wondering how to tackle t_i ?

(30) yoja cingu$_i$-lul na-nun eottuge John-i t_i saguiettnunji muluhboatta.[22, 23]
girl friend-Acc I-Top how John-Nom made asked
'I asked how John made friends with a girl (non-specific)'

The above data from (a) through (e) in (29) show some gradual ameliorating effects; it is not easy to determine within the binary notion of D-linking what exactly triggers the multi-way contrasts. In view of (29), it seems that an alternative notion of referentiality should be considered along with other problems to be dealt with within the notion of D-linking.

Set Theoretic Notion of Referentiality. In order to adequately capture the multi-way contrasts observed in (26), (27), and (29), referentiality should not be a binary notion which provides only the dichotomous distinction such as D-linked vs. non-D-linked or specific vs. non-specific. Instead, the varying degrees of acceptability in the above data should be captured by a definition of referentiality which allows different degrees of referentiality. This implies that referentiality may be a gradational or hierarchical relation among different elements. Therefore the key to account for the gradual multiple contrasts noticed among different wh-phrases extracted out of wh-islands may depend upon whether one can properly define such a relative hierarchical notion of referentiality. This is precisely what I will attempt to do in this subsection.

Let's first concentrate upon wh-phrases in the following additional data showing the same type of gradational effects.

(31) a. * Who are you wondering whether Joe visited t on his vacation ?
b.?(?)Which man are you wondering whether Joe visited t on his vacation ?
c. Which of these men are you wondering whether Joe visited on his vacation?
(32) a. * What do you wonder how I repaired t ?
b.?(?)Which car do you wonder how I repaired t ?
c. Which of these cars do you wonder how I repaired t ?

First of all, let's ask what the difference between *what* and *which car* in (32) may be. According to Pesetsky (1987), the former may be non-D-linked whereas the latter is D-linked. He argues that the D-linked and non-D-linked distinction may correlate with Heim's "familiar" vs. "novel" distinction. For D-linked wh-phrases, since the relevant answer comes from a set of previously established discourse entities, they may introduce familiar discourse entities, whereas this may not be the case for the non-D-linked "novel" bare wh-phrases. Following the evidence Pesetsky provides to differentiate bare wh-phrases from *which N* type phrases, which we may assume along with Cinque (1990) is responsible for the kind of contrasts shown between (32a) and (32b), the next question is: what is the crucial difference between *which N* type and partitive type *which of these cars* in (32) that causes the contrast between (32b) and (32c)? It is not clear how this contrast can be explained under the notion of D-linking because both *which N* type and partitive type wh-phrases would be D-linked according to Pesetsky. Nevertheless, there should be some intrinsic difference between the two which feeds the contrast.[24]

Some evidence for the assumption that *which N* type and partitive type wh-phrases should be treated differently may come from the following discourse structures in Korean.

(33) Speaker A: onul Russ Darrow-ey gottaowa-essoyo.
today Russ Darrow-to have been
'I have been to Russ Darrow today.'
gogi-eso nayil cha handae-lul sal-goeyo.
there tomorrow car one-Acc buy will
'I will buy a car there tomorrow.'

Speaker B:

appropriate question 1- * muott-lul nayil sal-goeyo ?
what-Acc tomorrow buy will
'What will you buy tomorrow ?'

appropriate question 2- ettun cha-lul nayil sal-goeyo ?
which car-Acc tomorrow buy will
'Which car will you buy tomorrow ?'

appropriate question 3- * geu jungeso ettun cha-lul nayil sal-goeyo ?
out of the which car-Acc tomorrow buy will
'Which of the cars will you buy tomorrow ?'

(34) Speaker A: onul Russ Darrow-ey gottaowa-essoyo.
today Russ Darrow-to have been
'I have been to Russ Darrow today.'
gogi-eso nayil cha handae-lul sal-goeyo.
there tomorrow car one-Acc buy will
'I will buy a car there tomorrow.'
maeum-ey deunun ssan cha-ka nehdae iss-esseyo.
I like inexpensive car-Nom four were
'There were four inexpensive cars that I saw and liked.'
Nissan Stanza, Toyota Corrolla, Honda Civic, Ford Taurus ieyo.
'Nissan Stanza, Toyota Corrolla, Honda Civic, and Ford Taurus.'

Speaker B:

appropriate question 1- * muott-lul nayil sal-goeyo ?
what-Acc tomorrow buy will
'What will you buy tomorrow ?'

appropriate question 2-??/*ettun cha-lul nayil sal-goeyo ?
which car-Acc tomorrow buy will
'Which car will you buy tomorrow ?'

appropriate question 3- geu jungeso ettun cha-lul nayil sal-goeyo ?
out of the which car-Acc tomorrow buy will
'Which of the cars will you buy tomorrow ?'

In (33), after the utterance of speaker A, question 1 by speaker B sounds very unnatural because it seems out of context with the related discourse. Question 3 sounds odd because a specific set of cars was not clearly established in the previous discouse utterance of speaker A. This shows that the answer for Korean partitive wh-phrases should always come from a set of entities clearly established in the previous discourse (compare this

with the naturalness of question 3 in (34)). Question 2 may be the only wellformed utterance in the discourse context of (33). In (34), speaker B's question 1 sounds very unnatural for the same reason, namely, that the question sounds completely unconnected to speaker A's utterance. Question 2 seems odd, too, because the question is not really asking for a choice among the four cars specified by speaker A, even though it is strongly implied in (34) that the person is going to buy one of the four specified cars tomorrow at Russ Darrow. Rather question 2 seems to be asking for a choice among any of those cars at Russ Darrow or some other place. This shows that the answer for *which N* type wh-phrases may come from a more broadly defined contextually relevant set than that for partitive type wh-phrases. Using the partitive wh-phrase in question 3 of (34) is very natural in the given context because there is a clear establishment of a specific set of cars in speaker A's utterance.

In view of (33) and (34), the difference between *which N* and partitive wh-phrases can be that the denotation of the latter may come from a more narrowly defined set than the former.[25] Therefore we may claim that partitivity in wh-phrases can function to carve out a smaller subset in comparison with non-partitive wh-phrases. As for bare wh-phrases like *who* and *what* in (31) and (32), it may not be that they are non-referential. Instead, it may just be that since the membership of the set which a bare wh-phrase quantifies over is unknown, the denotation of the answer for bare wh-phrases *who* or *what* may come from a much more broadly defined set (perhaps, the set of humans and the set of non-human entities, respectively) than *which N* and partitive wh-phrases.

Thus, the relative hierarchical notion of referentiality for different wh-phrases such as those involved in (31) and (32) may be defined as a set theoretic notion of referentiality as in (35). From this, the correlation of referentiality with different degrees of A-bar dependency across weak islands hitherto discussed in this section may be given as an empirical dictum (36).

Referentiality and A-bar Dependency:

(35) Between two wh-phrases A and B, A is regarded more referential than B iff the denotation of A comes from a more narrowly defined set than B.

(36) The more referential a wh-phrase is, the longer and stronger the A-bar dependency.[26]

(35) and (36) imply that in terms of extraction out of wh-islands, an adjunct wh-phrase (*how*, *why*, etc.,) may most strictly obey local domain, hence showing the weakest and shortest A-bar dependency, whereas a partitive wh-phrase may most freely establish A-bar dependency beyond its local domain, hence showing the longest and strongest A-bar dependency.[27] A relative referential hierarchy among different wh-phrases may be illustrated as:

(37) adjunct wh-phrases < bare wh-phrases < which N type < partitive wh-phrases

The hierarchy in (37) would account for the multiple contrasts noted among different wh-phrases extracted out of wh-islands.

3. Strong Islands and Barrier Defiability

Introduction. Manzini (1992) shows that in general, case-marked argument wh-phrases can escape out of weak islands (Wh-island, Inner island, Pseudo-opacity island, and Factive island) whereas caseless adjunct wh-phrases can not be extracted out of them. This may be one way to derive the general argument-adjunct asymmetry in weak islands, as I reviewed in Sections 1 and 2 while noting empirical problems her theory has to deal with. As far as the strong islands (Subject island, Adjunct island, Relative clause island, and complex NP island) are concerned, both Manzini's system and Cinque's (1990) approach make sure that neither argument (wh-)phrases nor adjunct (wh-)phrases may be extracted out of them. This argument-adjunct symmetry in strong islands may be in part what motivated Cinque to propose the elimination of Chomsky's (1986) Inheritance Barrier. He noted some redundancy in Chomsky's Barriers framework and argued for the elimination of the notion of Minimality Barrier and Barrier by Inheritance.

Cinque's analysis shows that this redundancy in Chomsky's system can be eliminated by postulating two distinct notions of barrier for the government chain (adjunct extraction) and the binding chain (argument extraction). His definition of a weak island as an XP that is theta-marked, but not L-marked, motivated the definition of barrier for government as an XP that is not L-marked by a [+V] category. His definition of a strong island as an XP that is neither theta-marked nor L-marked led to the definition of barrier for binding as an XP that is not theta-marked by a [+V] category.[28] According to Cinque, a government chain is for non-referential phrases whereas a binding chain is for referential phrases (D-linked). Therefore, the government barrier constrains only the movement of non-referential adjunct (wh-)phrases while the binding barrier constrains only the movement of referential argument (wh-)phrases. Suppose that this is not the case and that the binding barrier may constrain both movements. This would be to assume that the term 'binding' is not a notion reserved exclusively for referential argument phrases, but it is rather a cover term for both types of A-bar dependency: long distance A-bar binding (referential argument wh-phrases) and local distance A-bar binding (non-referential adjunct wh-phrases). Then we may be able to eliminate the notion of government barrier, because extraction of adjunct wh-phrases out of strong islands would now be constrained by the binding barrier and their extraction out of weak islands (wh-island, Inner island, Pseudo opacity island, and Factive island) may be independently ruled out by the referential hierarchy established in (37) through (19), (25), (35), and (36) together with the relevant local domain defined in (24).[29, 30] Such being the case then, the notion weak island may simply remain as a taxonomic artifact without any theoretical significance because the term 'local domain for A' dependency' defined in (24) refers to the weak island itself (wh-island, Inner island, Pseudo opacity island, and Factive island) containing A-bar trace (dependent element D) and its potential antecedent P.[31] Thus the term local domain for A' dependency and the notion weak island denote the same entity. In Rizzi's account, weak islands containing a potential subject (A' antecedent) for A'

trace just constitute an opaque domain for adjunct wh-traces, though not for argumental wh-phrases.

With the elimination of the government barrier, together with all of its residual effects, and with the notion of weak island demoted simply to the descriptive term 'local domain for A' dependency', what is left is only the binding barrier (strong islands), which will render the system maximally simple. As for strong islands (Subject island, Adjunct island, Complex NP island, and Relative clause island), since there may be no intervening potential A' antecedent with blocking effects for A' trace inside them, the local domain for A' dependency is predicted to be extended to the matrix clauses according to the definition of local domain for A' dependency given in (24).[32] This will incorrectly predict that all A' dependencies will be possible across strong islands. Therefore it may be necessary to independently define strong islands (binding barrier in Cinque's term) which would constrain A' dependency across them. Here I will simply adopt Cinque's definition of barrier for binding to define strong islands. After the possible elimination of government barrier, this will be the only notion of barrier necessary for the A' dependency system for the reason mentioned above.

(38) XP is a barrier(strong island) if it is not directly theta-marked by a +V category.

In this section, we will see that even this barrier may be neutralized if an extracted element is relatively high on the referential hierarchy established in (37). So, for some highly referential A' elements, A' dependency can be established even across the barrier defined in (38). Later this phenomenon will be referred to as Barrier Defiability.

Complex NP Island. Manzini (1992) discusses data like (39) as an example of Complex NP islands where an address-based dependency can not be established between extracted wh-phrases and their traces due to intervening case-marked noun phrases which can carry independent addresses of their own, hence the unacceptability of (39).

(39) [(33), Ch 1 in Manzini (1992)]
* Who$_i$ did you see [many attempts $_{cp}$[to portray t_i]] ?

In (39), the address based A' dependency is blocked by the independently addressed intervening NP (*many attempts*). The embedded CP in (39) will be a barrier according to Cinque's definition (38) for not being theta-marked by a [+V] element. Thus both Manzini and Cinque have correct results for (39). However, if the extracted wh-phrase becomes more referential according to (35), then the A' dependency across complex NP islands tends to get stronger and the barrier tends to be neutralized contra Manzini and Cinque, as can be exemplified by the following data with much improvement in acceptability.

(40) ?(?)Which old soldier/Which old lady did you see many attempts to portray t ?[33]

Roughly the same pattern can be found in (41) and (42).

(41) a. * Who did you notice many attempts to incriminate t ?
b.?(?)Which suspect/Which man did you notice many attempts to incriminate t ?
(42) a. * What did you see many attempts to fix t ?
b.?(?)Which car did you see many attempts to fix t ?

Furthermore, varying degrees of acceptability representing the referential hierarchy in (37) can be detected in the following data.

(43) a. * How did John announce a plan to read the book t ?[34]
b.*/??What did John announce a plan to read t ?
c. (?) Which book did John announce a plan to read t ?
d. Which of these books did John announce a plan to read t ?
(44) a. * How did John announce a plan to fix the car t ?
b.*/??What did John announce a plan to fix t ?
c. (?) Which car did John announce a plan to fix t ?
d. Which of these cars did John announce a plan to fix t ?[35]

In (43) and (44), as we move from (a) to (d) examples, we see gradual amelioration effects. This shows that the barrier formed by the intervening noun phrases can significantly be weakened and that the relative degrees of strength in barrier neutralization (debarrierization) may be reflected in the referential hierarchy.

Barrier Defiability. Other strong islands which block A' dependency are the Subject island, the Adjunct island, and the Relative clause island. These islands will form barriers according to definition (38); they are not directly theta-marked by a verb. All previous approaches on wh-movement such as Chomsky (1986), Rizzi (1990), Cinque (1990), and Manzini (1992) predict that all formations of wh-chain across strong islands will be uniformly blocked and thus there may be no distinction between argument wh-phrases and adjunct wh-phrases in this regard (the argument-adjunct symmetry in strong islands).[36] However, as can be seen in (45), there may be an argument-adjunct asymmetry even in strong islands.

(45) a. ?? Which fairy tale did you feel good after reading t ?
b. ** How did you feel good after reading the fairy tale t ?[37]

Clearly, there is a contrast between (a) and (b) of (45) in terms of acceptability. More consideration may be necessary to determine whether or not a strong island forms an absolute barrier without any possibility of debarrierization (weakening).

Manzini brings up one significant fact about strong island violation by arguments in comparison with antecedent government violation by adjuncts, and states that "a pure Subjacency violation is better than a pure antecedent government violation"(Manzini, 78). This can be illustrated by the following data from Manzini.

(46) a. * What$_i$ does [repairing t_i] bother you ? -- interpretable

b. * How$_i$ do you wonder [what$_j$ to repair t_j t_i] ? -- not interpretable
[(4) and (18) of Ch 2 in Manzini]

Manzini noted that there is an important difference between (46a) and (46b) in terms of interpretability. The latter, a blockage in categorial index dependency (a pure antecedent government violation), makes the structure completely uninterpretable, whereas the former, a blockage in address-based dependency (a pure Subjacency violation), may still have some interpretability through the identification process of addressed positions.

This observation may naturally feed the assumption that in wh-extractions out of strong islands, the degree of acceptability or interpretability may increase or decrease depending upon what type of wh-phrases are extracted. This assumption is born out by the following Korean data.

(47) Complex NP island

a. * ettuge$_i$ Mary-nun [sunsang-i gongongyoni t_i gu yohaksang-lul binanhaessta
how Mary-Top teacher-Nom in public the schoolgirl-Acc criticized
-nun] sasil-lul algoissni ?
fact-Acc know
'How does Mary know the fact that the teacher criticized the schoolgirl t in public ?'

b. ?? nwuku$_i$-lul Mary-nun [sunsang-i gongongyoni t_i binanhaessta-nun] sasil-
who-Acc Mary-Top teacher-Nom in public criticized fact
lul algoissni ?
Acc know
'Who does Mary know the fact that the teacher criticized t in public ?'

c. (?)ettun yohaksang$_i$-lul Mary-nun [sunsang-i gongongyoni t_i binanhaessta
which schoolgirl-Acc Mary-Top teacher-Nom in public criticized
nun] sasil-lul algoissni ?
fact-Acc know
'Which schoolgirl does Mary know the fact that the teacher criticized t in in public ?'

(48) Subject island

a. * ettuge$_i$ Tom-un [Sue-ka gyosil-eso t_i John-eke sonsugun-lul juessta-
how Tom-Top Sue-Nom in the classroom John-Dat handkerchief-Acc gave
nunkes]-i isanghatako sangakhani ?
-Nom strange be think
'How does Tom think that [the fact that Sue gave a handkerchief to John t in the classroom] is strange ?'

b. ?? nwuku$_i$-eke Tom-un [Sue-ka gyosil-eso t_i sonsugun-lul juessta-
who-Dat Tom-Top Sue-Nom in the classroom handkerchief-Acc gave
nunkes]-i isanghatako sangakhani ?
-Nom strange be think
'To whom does Tom think that [the fact that Sue gave a handkerchief t in the classroom] is strange ?'

c. (?) ettun namhaksang$_i$-eke Tom-un [Sue-ka gyosil-eso t_i sonsugun-lul
which schoolboy-Dat Tom-Top Sue-Nom in the classroom handkerchief
ju-essta-nunkes]-i isanghatako sangakhani ?
gave -Nom strange be think
'To which schoolboy does Tom think that [the fact that Sue gave a handkerchief t in the classroom] is strange ?'

Furthermore, different degrees of interpretability, which reflect the referential hierarchy in (37), may be found in the following English data.

(49) Subject island
a. How does repairing the car t bother you ?
b. What the hell does repairing t bother you ?
c. What does repairing t bother you ?
d. Which car / Which of these cars does repairing t bother you ?

(50) Adjunct island
a. How was Mary so happy because Mickey read the storybook t ?
b. What the hell was Mary so happy because Mickey read t ?
c. What was Mary so happy because Mickey read t ?
d. Which storybook / Which of these storybooks was Mary so happy because Mickey read t ?

Many native speakers agree that in the above data, the degree of interpretability gradually increases from the (a) to (d) examples. The same gradational effects in acceptability can be found in some additional Korean data as well, (51) and (52), which show the same kind of gradually increasing ameliorations from the (a) to (d) examples.

(51) Adjunct island
a. ettuge$_i$ sunsang-uy gibun-i [Tom-i t_i gu chak-ul ilkessgitamune] coessni ?
how teacher-Gen feeling-Nom [Tom-Nom the book-Acc read because] good
'How did the teacher feel good because Tom read the book t ?'
b. (dodeche) muott$_i$-lul sunsang-uy gibun-i [Tom-i t_i ilkessgitamune] coessni?
the hell what-Acc teacher-Gen feeling-Nom[Tom-Nom read because] good
'What (the hell) did the teacher feel good because Tom read t ?'
c. ettun chak$_i$-lul sunsang-uy gibun-i [Tom-i t_i ilkessgitamune] coessni ?
which book-Acc teacher-Gen feeling-Nom [Tom-Nom read because] good
'Which book did the teacher feel good because Tom read t ?'
d. i-junge ettun chak$_i$-lul sunsang-uy gibun-i [Tom-i t_i lkessgitamune]coessni?
of these which book-Acc teacher-Gen feeling-Nom [Tom read because]good
'Which of these books did the teacher feel good because Tom read t ?'

(52) Relative Clause island
a. ettuge$_i$ gu jadongcha hoesa-uy sajang-un [han sigan-nae t_i gu gigye-lul
how the car company-Gen president-Top [one hour-within the machine-Acc
gochin] jungbigong-eke sangeum-lul juessni ?
fixed] auto mechanic-Dat reward-Acc gave

'How did the president of the car company give a reward to the mechanic who fixed the machine t within one hour ?'

b. (dodeche) muott$_i$-lul gu jadongcha hoesa-uy sajang-un [han sigan-nae t_i
the hell what-Acc the car company-Gen president-Top [one hour-within
gochin] jungbigong-eke sangeum-lul juessni ?
fixed] auto mechanic-Dat reward-Acc gave
'What (the hell) did the president of the car company give a reward to the mechanic who fixed t within one hour ?'

c. ettun gigye$_i$-lul gu jadongcha hoesa-uy sajang-un [han sigan-nae t_i
which machine-Acc the car company-Gen president-Top [one hour-within
gochin] jungbigong-eke sangeum-lul juessni ?
fixed]auto mechanic-Dat reward-Acc gave
'Which machine did the president of the car company give a reward to the mechanic who fixed t within one hour ?'

d. i-junge ettun gigye$_i$-lul gu jadongcha hoesa-uy sajang-un [han
out of these which machine-Acc the car company-Gen president-Top [one
sigan-nae ti gochin] jungbigong-eke sangeum-lul juessni ?
hour-within fixed] auto mechanic-Dat reward-Acc gave
'Which of these machines did the president of the car company give a reward to the mechanic who fixed t within one hour ?'

What all the data hitherto considered in this section show is that there might be a similar argument-adjunct asymmetry even in wh-extractions out of strong islands, as can be seen in (45). Also, the barrier defined in (38) may be neutralized (debarrierization) and thus A' dependency can be established even across the barrier, if extracted wh-phrases are highly referential, as exemplified by (51c and d) and (52c and d).

In light of this observation, I propose a notion of Barrier Defiability, which manifests the varying degrees of debarrierization according to the referential hierarchy in (37).

(53) Barrier Defiability: The more referential a wh-phrase is, the greater the barrier defiability.

Summary

The goal in this paper was to find the proper correlation between the notion of referentiality and A-bar dependency. In Section 1, on the basis of the notion of referentiality defined by phi-features, I showed how the analogy between A' dependency and long distance binding can be drawn. The specification of phi-features renders arguments referential (long distance A' dependencies) and adjuncts non-referential (local A' dependencies) in the same manner that it makes the Korean long distance anaphor more referential than the local anaphors. With the derived account for the argument-adjunct asymmetry in weak islands (A'-chains), other types of dependencies such as X^0-chains and A-movement were dealt with in a similar manner. Finally, to accommodate different types of dependencies into a uniform notion of locality, I defined relativized

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local domains, and provided the precise correlation between referentiality and the length of X(P)-Chains. In Section 2, the initial definition of referentiality was refined as the set theoretic notion of referentiality in view of the different degrees of strength in A' dependencies across wh-islands. It was shown that the relative strength of A' dependencies across weak islands correlates with the revised notion of referential hierarchy: adjunct wh-phrases < bare wh-phrases < which N < partitive wh-phrases. In Section 3, I considered strong islands. I first showed why an independent notion of barrier may be required to properly constrain A'movements across the strong islands, in the same spirit of Rizzi (1990). Then it was shown that there may be an argument-adjunct asymmetry even in wh-extractions out of strong islands. It was noted that if extracted wh-phrases are highly referential according to the above referential hierarchy, the barrier may be neutralized and thus an A'dependency can be established even across a strong island. This defiance of a barrier was referred to as Debarrierization, which is reflected in the relative notion of Barrier Defiability.

NOTES

[1] In the case of Pseudo-Opacity and Inner Islands, Rizzi argues that adverbial QP (*beaucoup*, VP Specifier) and negation function as intervening potential A-bar antecedents which create opaque domains for adjunct wh-traces.

[2] For Factive island, Manzini suggests that there may be an empty factive operator in the embedded Spec CP position. This factive operator may serve as an intervening potential A-bar antecedent, and block the categorial index dependency for the adjunct wh-trace with the barrierhood of an embedded CP. This being the case then, Factive islands may also be explained by Rizzi's Relativized Minimality, even though Rizzi argues that the factive complement is an intrinsic barrier.

[3] For some evidence that long-distance scrambling is A'-movement, look at the arguments that Mahajan (1990) and Saito (1992) provide. Lee (1993) provides some diagnostics to be used to distinguish A'-movement from A-movement.

[4] There have been three major approaches to the issue of long-distance binding, namely, Manzini and Wexler's (1987) parameterization of local domains, the reclassification of long-distance anaphors as logophoric pronouns, and the LF-movement approach. Some non-movement approaches are Progovac's (1992) Relativized Subject and Manzini (1992).

[5] Among the phi-features (person, gender, number), given that all nominal expressions should be inherently specified in terms of number feature (sg. or pl.), the number feature

may not be referentially significant and thus may not play any role in determining relative referential hierarchy between two expressions A and B. This may be rather obvious because all the anaphoric expressions in (10) should be changed into corresponding plural forms by the affixation of the plural marker *-tul*, if their antecedents are plural. This is due to the requirement that coindexed NPs agree in syntactic number. Then, the number feature, functioning only as the means to satisfy a peripheral morphological agreement in number between binder and bindee, may be simply vacuous in determining referential hierarchy.

[6] Reinhart and Reuland (1993) also briefly note that the notion referentiality may correlate with the specification of phi-features.

[7] One might wonder why a similar transmission of phi-features is not possible between the local anaphors *cakicasin & selo* (which have no phi-features that are referentially significant) and their antecedents. Once the transmission of phi-features becomes possible from the antecedents to the local anaphors, the local anaphors will come to have the phi-features that their antecedents carry. Thus, the analysis would incorrectly predict that they too can be long distance bound. Here I propose that transmission of phi-features is possible only along a movement chain. As for the dependency between anaphors and their antecedents, since there is no movement involved, such phi-feature transmission is not possible due to the absence of transmission path, and the local anaphors *cakicasin & selo*, with no phi-features, should be bound only locally like adjunct wh-traces. Note that here I am not adopting the LF-movement approach on long distance anaphors.

[8] See note 3.

[9] The exact nature of clitic placement in Romance languages is beyond the scope of this work. According to Kayne (1989), two conditions should be met for clitic climbing (long distance cliticization): one is that non-finite infl must L-mark VP, and the other is a structural requirement of permitting infl to comp to matrix infl movement. These two conditions are directly related to the difference between Italian and French in terms of clitic climbing, according to him.

[10] Sportiche (1992) notes that there have been two main different analyses on clitic placement, namely, movement approach and base generation approach. He reconciles the two approaches by arguing that the clitic is base generated as a head in the surface head position of some clitic projection, the Spec position of which is to be occupied at a later derivation by pro or an overt XP through some phrasal movement. He argues that the nature of this movement necessitates the Clitic Criterion in the same spirit of May's (1985) Wh-Criterion. For different approaches on clitic placement and some hard to deal with issues, interested readers should look at references cited therein.

[11] Clitics are overtly marked for Case (Nom, Acc, Dat, Gen, Loc).

[12] See note 7.

[13] Cinque (1990), to be discussed below, uses Pesetsky's (1987) notion of D-linking in explaining A' dependency across wh-islands.

[14] As far as A-movement is concerned, I am basically adopting Manzini's (1992) approach, namely, case-marking (K-government), even though Manzini's system has problems in view of the data in (8) and long-distance binding phenomenon. Her system also has other numerous problems to be discussed in subsequent sections.

[15] An analogous account may be given for the strict local nature of Noun Incorporation in Baker (1988), since the class of nouns that undergo noun incorporation (obeying the Head Movement Constraint) may carry no Case feature. Long distance cliticization is possible however because clitics (N^0 category) in general are clearly marked for Case (see note 11). Thus clitics carry some intrinsic Case feature, which will properly licence the phi-features they carry for referential interpretation.

[16] Progovac (1992) took a non-movement approach toward the issue of long distance binding. She argued that only an X^0 category may be an antecedent for an X^0 anaphor and only XP (Specifier) may be an antecedent for a bimorphemic phrasal anaphor. In other words, she relativized the definition of local domains to the type of anaphors involved (XP anaphor vs. X^0 anaphor).

[17] See note 3 for the A-bar nature of (wh-) scrambling.

[18] Tense island effects may be observed only when the extracted wh-phrases are bare interrogatives such as *who*, *what*, etc., as in (26b), (27b), and the following English data Manzini provides.

(i) * What$_i$ do you wonder how I repaired t_i ? To be compared with :
(ii) ? What$_i$ do you wonder how to fix t_i ?

[19] Nevertheless, Rizzi's notion of referentiality based upon the argumental and non-argumental (quasi-argumental) distinction, in spite of its vagueness in definition, may capture the general argument-adjunct asymmetry in wh-extraction out of indirect questions.

[20] The different degrees of acceptability in (29) are shared by most of the native speakers I consulted.

[21] There are some other additional problems in the D-linking approach. First, as Rizzi (1990) and Kroch (1989) note, Cinque's crucial utilization of the notion of D-linking alone can not explain the following argument-adjunct asymmetry: [(8) in Kroch (1989)].

(i) a. * For what reason don't you know if we can say [that Gianni was fired e]?
b. ? What reason don't you know if we can give e for Gianni's firing ?

Kroch observed that both wh-phrases in (i) would be equally referential in terms of D-linking. Then this would show that the asymmetry between arguments and adjuncts in extractibility out of weak islands can not be completely captured by referentiality effects based upon the notion of D-linking. The above data is in part what motivated Rizzi (1990) to argue contra Cinque's (1990) use of D-linking. His notion of referential (argumental) theta roles needs to be maintained to derive the general argument-adjunct asymmetry in escapability out of weak islands. Second, according to Pesetsky (1987) *how many N* type wh-phrases, like *who* and *what*, may not be D-linked. Assuming that the following questions in (ii) are seeking an answer for a number of problems without the relevant existential presupposition in the sense of Kroch (1989), then both interrogative phrases in (ii) may be non-D-linked. Nevertheless, in the following data, there is a typical argument-adjunct asymmetry in extractibility out of a wh-island.

(ii) a. ? Combien de problemes ne sais-tu pas comment resoundre t ?
'How many problems don't you know how to solve ?'
b. * Combien ne sais-tu pas comment resoundre [t de problemes] ?
'How many don't you know how to solve of problems ?'
[Ch3 (34) in Rizzi (1990)]

Therefore it may not be clear how the notion of D-linking can account for another argument-adjunct asymmetry as in (ii). Third, following Enc (1991), if we assume that universally quantified NPs with covert partitive reading may be interpreted as being D-linked and specific, then the following data would remain unexplained under the notion of D-linking.

(iii) * Every man, I wonder why John criticized t.

In the above data, *every man* is topicalized out of a wh-island. Why the long distance dependency between it and its trace may not be possible is unclear because the universally quantified NP is D-linked in the sense of Enc (1991). The data (iii) also poses a problem for Manzini (1992) because the topicalized phrase is clearly case-marked (K-governed). She attempted to provide a solution for similar Italian data by arguing that for sentences with topicalized universally quantified NPs, the relevant LF-representation is the one where only the non-K-governed Determiner (non-case-marked *every*) moves out of wh-islands, hence the failure of long distance A' dependency. This solution, however, is not convincing enough.

[22] Mahajan (1991) argues that only specific phrases can enter long distance A' dependency out of weak islands. However, as the Korean data in (30) shows, a non-specific phrase can also move out of a wh-island. Assuming that specificity is another binary notion, it cannot adequately handle the multi-way contrasts among the different wh-phrases in (26), (27), and (29).

[23] Enc (1991) argues that Pesetsky's (1987) D-linking may be described as specificity. Then both *which N* type wh-phrases and partitive type wh-phrases in (26), (27), and (29) would be specific. In fact, Enc's analysis implies that *which N* type wh-phrases, being D-linked, may be interpreted as having the covert partive reading *which of the N*.

[24] As I mentioned in note 23, if it is the case that *which N* type wh-phrases, being D-linked and specific, may be interpreted as a covert partitive as Enc's (1991) notion of specificity implies, this entails that there may be no difference in meaning between *which N* type and partitive type (especially *which of the N* type) wh-phrases.

[25] Partitivity may function to define a narrower set even in quantified Nps. See note 26.

[26] Assuming that partitivity and noun-modifiers such as relative clauses, (participial) adjectives and so on may function to carve out a smaller subset, (35) and (36) may be generalized to cases where quantified phrases are topicalized out of wh-islands.

(i) a. * Every woman, I wonder why Susan hated t
b.?(?)Every one of these/the women, I wonder why Susan hated t
c. ? Every woman that Mary brought to that party, I wonder why Susan hated t
(ii) a. * Every statement, I wonder why he has retracted t
b.?(?)Every one of these/the statements, I wonder why he has retracted t
c. ? Every statement made yesterday by Clinton, I wonder why he has retracted t today.
(iii) a. * Someone, I wonder how my boss will be able to find t
b. ? Someone as smart as Mary, I wonder how my boss will be able to find t
(iv) a.?(?)How many books do you wonder whether John read t yesterday ?
b. How many of these books do you wonder whether John read t yesterday ?

[27] As for the extraction of adjunct wh-phrases like *how*, *why*, etc., the relevant questions are not seeking an answer from entities in the domain of discourse, because they do not denote any referential entity. The case is different for argument wh-phrases where the relevant questions are always seeking an answer from referential entities in the domain of discourse. For adjunct wh-phrases, there may be no entity referred to by them. Due to this non-existence of denotative entity, there may be no reference for adjunct wh-phrases unlike argument wh-phrases. Since they don't have any referent at all, there may be no (contextually) defined set from which their denotation comes. Therefore they should be regarded as the least referential element on the hierarchy (37).

[28] For Cinque, L-marking is a direct selection by a lexical head (sisterhood relation) whereas theta-marking can be either a direct seletion or an indirect selection by a lexical head. Thus theta-marking is a looser notion than L-marking, according to him.

[29] The extraction of adjunct wh-phrases out of weak islands can also be independently ruled out by Rizzi's Relativized Minimality.

[30] The government barrier may be independently required for Cinque's Italian data, which shows that adjunct (wh-)phrases can not be extracted out of some weak islands (indirect CP complements that are not L-marked) because Rizzi's Relativized Minimality would not be relevant for the adjunct (wh-)traces inside those indirect CP complements (weak islands, according to Cinque). See page 39 of Cinque (1990).

[31] See notes 1 and 2.

[32] Rizzi (1990), in note 6 of Ch.1, also notes that his notion of Relativized Minimality may not be relevant for strong islands for the same reason, namely, because of the non-existence of intervening potential A-bar antecedents for A-bar traces within strong islands. This may be why he states that a separate notion of barrier may be required to block (all) A' dependencies across strong islands. His definition of barrier is basically Cinque's government barrier. Here I am simply arguing along the same line of reasoning as what Rizzi mentioned concerning strong islands.

[33] As for some acceptable NP extractions out of strong islands, including such cases as (40), and especially for the case of possible relativization of argumental noun phrases (but not PP arguments) out of strong islands, Cinque (1990) does not resort to the A-bar movement chain but to empty resumptive pronominal tactics. Therefore, in those cases, what apparently lookes like a wh-trace (variable) is in fact an A-bar bound empty resumptive pronoun (pro) according to him, hence the connection between the A-bar antecedent and A-bar bound pro is not sensitive to movement constraints like Subjacency (strong islands), because there is no move-*a* involved. See Ch. 3 of Cinque (1990) and Lasnik & Stowell (1991) for some counterarguments.

[34] According to Manzini (1992), a categorial index dependency can not be established between the adjunct wh-phrase and its trace in the following example because of an intervening NP barrier.

(i) * How$_i$ did you see $_{NP}$[many attempts $_{CP}$[to portray Mary t_i]] ?
[(32) of Ch.2 in Manzini (1992)]

In (i), after *how* reaches the embedded Spec CP position, the wh-phrase must move beyond the embedded NP in one fell swoop, because there is no additional internal A-bar Spec position inside NP. Manzini assumes that Spec NP is not an A-bar position. The movement should cross the NP barrier, hence the ill-formedness of the above data.

[35] As for the verb phrase, *announce a plan to--*, in sentence (44d), the process of reanalysis of [V + N] as [V], which is required to debarrierize the embedded CP, is not possible, because *announce a plan to fix--* is not synonymous with [V] *plan to fix--*, even though [V + N] *have a plan to--* can be reanalysed as synonymous with [V] *plan to--*.

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[36] For Rizzi (1990), this argument-adjunct symmetry in strong islands may be guaranteed through Cinque's (1990) notion of government barrier (see note 32). Cinque derives the above symmetry through two different notions of barrier, namely binding barrier and government barrier (also see note 33). For Manzini (1992), both address-based dependency and categorial index dependency can not be established across strong islands because government will be blocked by an intervening barrier that is defined upon the syntactic condition g-marking.

[37] More data which may show an argument-adjunct asymmetry in strong islands:

(i) a. Which car/Which of these cars did you feel good after fixing t ?
b. * How did you feel good after fixing the car t ?
(ii) a. Which girl/Which of these girls did you feel good after dating t ?
b. * How did you feel good after dating Susan t ?
(iii)a. Which of these problems did you feel relieved after solving t?
b. * How did you feel relieved after solving the problem t ?

Manzini (1992) provides the following relative clauses which show a similar type of argument-adjunct asymmetry in strong islands.

(iv)a.(*)A doctor who$_i$ [I felt better [after consulting t_i]]
b. * A reason why$_i$ I felt better [after consulting my doctor t_i]
[(104) and (107), Ch.3 in Manzini]

The account Manzini gives for the relatively well-formed result of (iv.a) is that the embedded adjunct CP may be reanalyzed as a complement. However, it would not be clear why (iv.b) is not allowed under the same reanalysis. The contrast between (iv.a) and (iv.b) may be accounted for by having recourse to relative referential hierarchy among different wh-phrases, together with the notion of Barrier Defiability (to be discussed below).

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